



FINAL WORK PLAN FOR THE
ENGINEERING EVALUATION AND COST ANALYSIS
OF THE FORMER CELOTEX SITE
2800 South Sacramento Avenue
Chicago, Illinois 60623

Prepared for:

ALLIEDSIGNAL, INC.
MORRISTOWN, NEW JERSEY

and for

THE CELOTEX CORPORATION
TAMPA, FLORIDA

Prepared by:

PARSONS ENGINEERING SCIENCE, INC.
1000 JORIE BOULEVARD, SUITE 250
OAK BROOK, ILLINOIS 60521

JANUARY 1997

Parsons ES Project No.:730577

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SECTION 1 INTRODUCTION

1.1 PROJECT OVERVIEW

On 1 November 1996, the United States Environmental Protection Agency (USEPA) entered into an Administrative Order by Consent (AOC) with the Participating Respondents for the property located at 2800 South Sacramento Avenue, Chicago, Illinois (the Site). The AOC stipulates that an Engineering Evaluation and Cost Analysis (EE/CA) shall be performed for the Site, and that the remedial actions assessed as part the EE/CA shall also address the impacted residential areas identified in the surrounding community.

Parsons Engineering Science, Inc. (Parsons ES) has been retained by the Participating Respondents through a contract with AlliedSignal, Inc. (hereinafter referred to as AlliedSignal) to provide engineering services and to perform any and all work associated with the execution of the EE/CA for the Site. This work plan represents the first deliverable required by the AOC within the EE/CA process.

The scope of work (SOW) for the EE/CA states that the goal of the EE/CA is "to provide information to the USEPA for the selection of removal actions to address contamination at the Site under the non-time critical authority of the National Contingency Plan." All work performed by Parsons ES will be conducted to satisfy the requirements of the AOC, and will meet the requirements of Section 300.415(b)(4)(i) of the National Oil and Hazardous Substance Pollution Contingency Plan (also referred to as the National Contingency Plan [NCP]) for non-time critical removal actions.

1.2 WORK PLAN OBJECTIVES

As specified in the SOW, the objectives of this work plan are to:

1. Define the overall approach that will be taken during the execution of the EE/CA process.
2. Explain how the information from the residential area sampling activities and risk assessment will be used to expedite response actions associated with residential soil contamination.

3. Present the anticipated duration of key tasks associated with the EE/CA based on a baseline schedule date.

In this EE/CA work plan and in all subsequent documents, the following terminology will be used:

1. The area within the property boundaries of the site at 2800 South Sacramento Avenue will also be referred to as "the Site," "the main site," or "on-site areas."
2. The potentially impacted residential areas will also be referred to as "off-site areas."
3. On-site and potential residential area contamination will also be referred to as "on-site and off-site contamination." All other potential areas of impact will be referred to by the specified name of the area, e.g., the Chicago Ship and Sanitary Canal.

This work plan is divided into five sections. Section 1 provides this introduction. Section 2 presents a brief description of the Site, site history, and regulatory background. The EE/CA study approach is fully outlined in Section 3. A project schedule is presented in Section 4, and a tabular listing of key project persons is provided in Section 5.

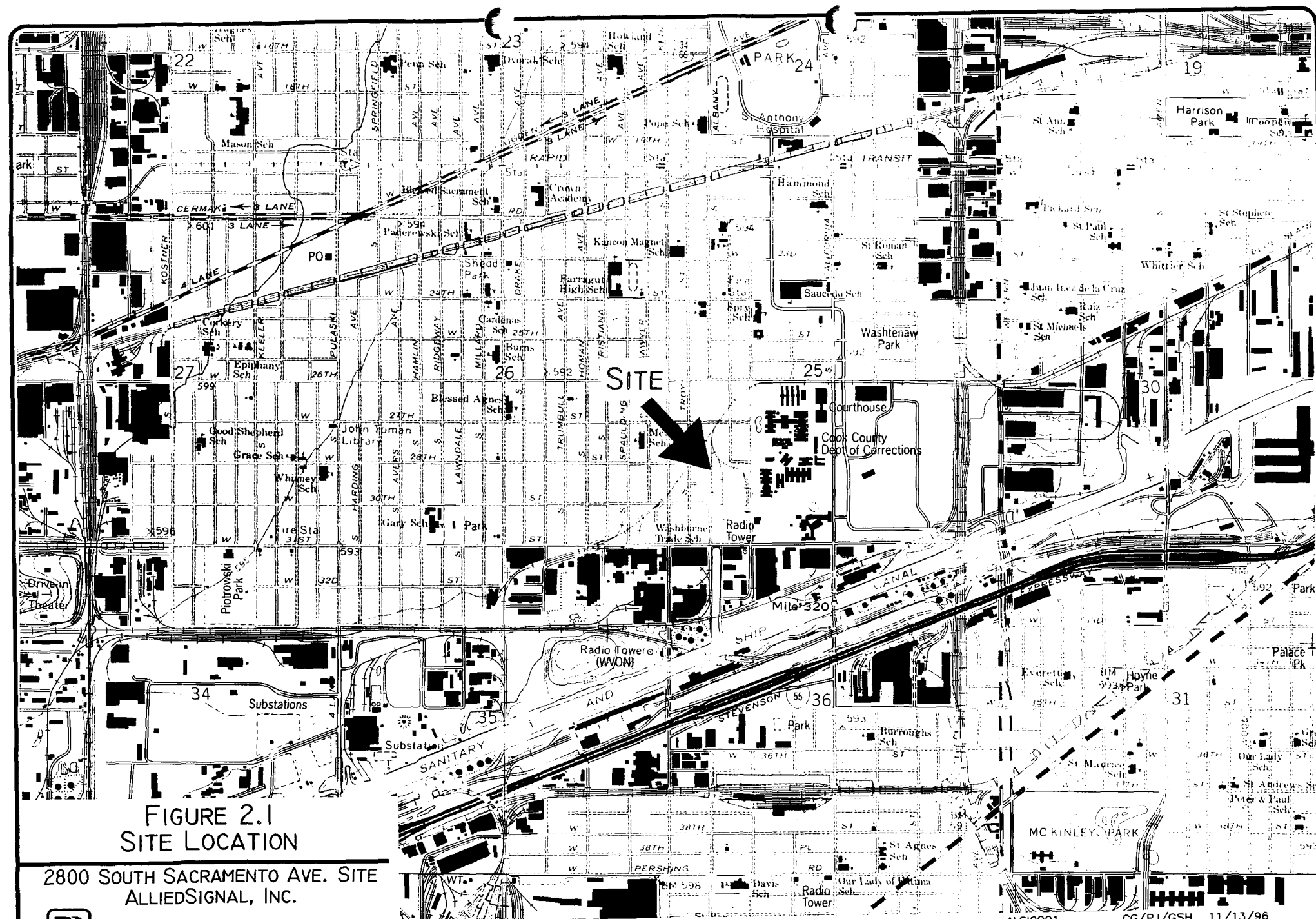
SECTION 2 PROJECT BACKGROUND

2.1 SITE DESCRIPTION

The Site is located on the west side of Sacramento Avenue between 31st and 27th streets (Figure 2.1). The United States Geological Survey (USGS) reference for the Site location indicates that it is situated in the West 1/2 of the Southwest 1/4 of Section 25, T39 North, R13 East of the Englewood 7.5 Minute Quadrangle. The Site encompasses 24 acres; 18 acres of the property are owned by The Celotex Corporation, and a 6-acre parcel to the south is owned by Monarch Asphalt Company and is currently being used for truck storage.

The Site is situated amidst a multi-use area that includes residential, commercial, manufacturing, and industrial establishments. A site layout map is presented on Figure 2.2. The Cook County Correctional Facility is located across from the Site, on the east side of Sacramento Avenue. Residential property/buildings and the Atkinson, Topeka & Santa Fe railroad line adjoin the Site along the north and west property boundaries. Residential homes are also located across from a portion of the eastern property boundary, on the north side of the Site (on the east side of Whipple Avenue). The south side of the Site is bounded by the No. 3050 Chicago Fire Department, Bureau of Support Services and by vacant land owned by the Palumbo Corporation. Residential homes are present on the west side of South Albany Avenue across from the southwest quadrant of the Site. The Chicago Ship and Sanitary Canal is located approximately 1,500 feet south of The Celotex Corporation property.

The Site formerly housed several manufacturing-related buildings including a large warehouse, smaller storage sheds, an enclosed tank area, and an office building. All buildings have been razed, demolished and removed from the Site. The only remnants of the manufacturing operation currently visible on site are the concrete slabs. Areas not overlain by concrete are covered with vegetation (a soil cover was placed over the Site



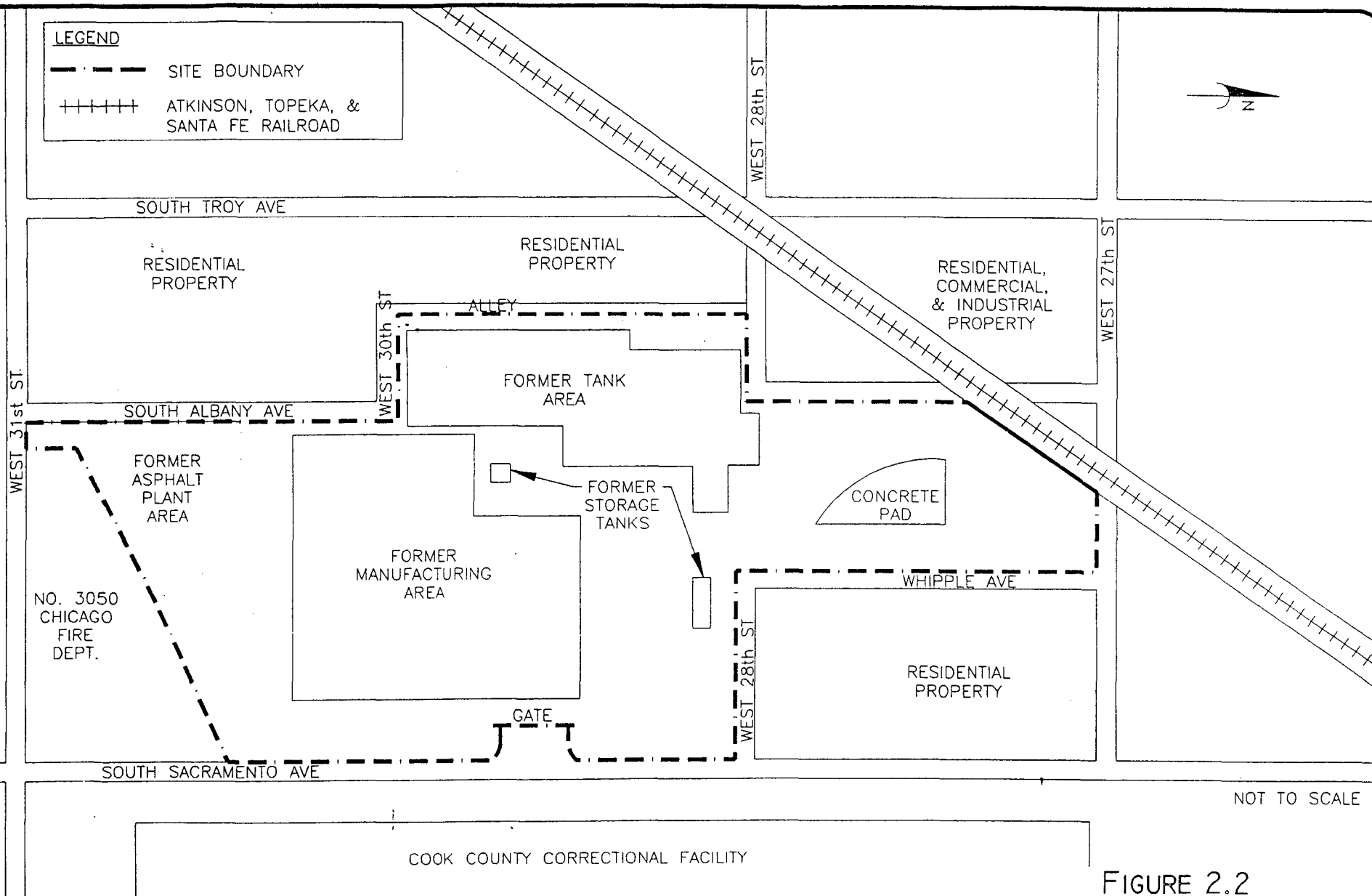
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ALSI0001

CG/PJ/GSH 11/13/96

LEGEND

- SITE BOUNDARY
- +++++ ATKINSON, TOPEKA, & SANTA FE RAILROAD



**FIGURE 2.2
SITE LAYOUT**

2800 SOUTH SACRAMENTO AVE. SITE
ALLIEDSIGNAL, INC.



subsequent to the completion of demolition activities). The Site is surrounded by a chain-link fence, and 24-hour security service is present in a trailer located at the main gate off of Sacramento Avenue.

2.2 SITE HISTORY

The following discussion provides a brief summary of the Site's history. The information provided herein was compiled from past reports prepared by the Illinois Environmental Protection Agency (IEPA) and ERM, Inc.

Prior to 1910, the property known as the Site was owned by the Maxwell brothers and was operated as a farm and or homestead. Between 1910 and 1911, the use of the property is not known. From 1911 until 1982, the Site was used by various companies involved in the manufacturing, storing, and distribution of asphalt-roofing products. The following is a general itemization of the property's use during the period from 1911 to 1993:

1911 to 1967	Barrett Paving Materials manufactured roofing singles.
1911 to 1970	Barrett and Allied Chemical Corporation (until 1958 known as the Allied Chemical and Dye Corporation) operated a coal tar distillation and roofing plant.
1940s	Allied Chemical began the asphalt mixing plant.
1942	Reportedly the first date that Allied Chemical was recorded as an owner of parcel(s) associated with the Site.
1967	The Celotex Corporation bought the assets of the Barrett Division of Allied Chemical Corporation, including the Chicago roofing plant and some of its properties. Allied Chemical continued to operate the tar plant.
January 1970	The tar plant operated by Allied Chemical was shut down.
January 1972	Allied Chemical sold two additional parcels of Site property to The Celotex Corporation.
September 1975	Allied Chemical sold another two parcels of Site property to The Celotex Corporation. Allied Chemical sold the tar plant property to Service Welding and Cleaning Company (SWCC). Allied Chemical subsequently leased a building from SWCC to operate a sealer plant.
1977	Allied Chemical closed the sealer plant.
1979	Allied Chemical sold the asphalt mixing facility to Barrett, who continued its operation.

1980	The Celotex Corporation bought additional property from Allied Chemical.
1989	Barrett sold the asphalt mixing plant to Monarch Asphalt Company, who subsequently dismantled the plant, but retained ownership of the parcel.
1991-1993	Demolition of Site structures began in late 1991 and was completed in 1993.

2.3 SITE REGULATORY BACKGROUND

In 1989, the IEPA initiated a process that resulted in the Site being placed in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). Also in 1989, the IEPA performed the first Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site evaluation, which resulted in the preparation of a Preliminary Assessment Report by the Agency. Subsequent field investigations included a screening site inspection (SSI) in 1991, an expanded site inspection (ESI) in 1992, and a listing site inspection (LSI) in 1993. In 1993, a USEPA Technical Assistance Team assessed the Site. On 8 November 1994, the USEPA issued a Special Notice of Liability and a 104(e) Information Request Letter to The Celotex Corporation and AlliedSignal. The special notice letter requested The Celotex Corporation and AlliedSignal to perform sampling in residential areas in the vicinity of the Site to determine the extent and degree of carcinogenic polycyclic aromatic hydrocarbon (PAH) contamination, prepare an EE/CA, and perform remediation as appropriate.

The various documents that have been generated as a result of previous regulatory site investigation actions include the following:

- Discovery Assessment (IEPA 1989)
- Preliminary Assessment (IEPA 1989)
- CERCLA Screening Site Inspection (IEPA 1991)
- Expanded Site Inspection (IEPA 1992)
- Listing Site Inspection (IEPA 1993)
- Preliminary Sample Summary Letter (IEPA 1995)

AlliedSignal and The Celotex Corporation signed an informal agreement with the USEPA in July 1995. Under the informal agreement, AlliedSignal and The Celotex Corporation investigated PAH levels on approximately 50 residential properties within a defined study area (a 2,500-foot radius from the Site). This investigation evaluated the magnitude and extent of PAHs associated with the soils in the residential community surrounding the Site. The Site Respondents have completed this detailed residential soil sampling program, and have prepared a risk assessment based on the analytical results from the investigation. The risk assessment incorporates both deterministic and probabilistic methodologies to determine risk-based cleanup objectives for the impacted community. The composition of the Site's soil cover was also evaluated by the Respondents during recent on-site sampling activities. The reports generated from these sampling efforts and submitted to the USEPA are as follows:

- Residential Sampling Data Report, ERM-North Central, 1995
- Results of the Celotex Site Cover Soil Sampling, ERM-North Central, 1995
- Deterministic and Probabilistic Calculations to Estimate Risk-Based Cleanup Goals for Soils at Residences Near the Site, Alceon Corporation, 1996

In addition, The Celotex Corporation is currently addressing issues raised by the City of Chicago and the State of Illinois pertaining to surface runoff at the Site. The Celotex Corporation is currently evaluating the existing storm sewers on the Site as part of an evaluation of steps needed to mitigate uncontrolled surface water runoff.

SECTION 3

ENGINEERING EVALUATION AND COST ANALYSIS STUDY APPROACH

3.1 OVERVIEW

This section provides discussion on the various activities that will be performed and the deliverables that will be generated during the execution of the EE/CA. Subsection 3.2 provides an overview of each major deliverable that will be generated during the EE/CA process. Subsection 3.3 presents a general conceptual discussion on the process of using information from the residential soil sampling and risk assessment to expedite response actions that address the residential soil contamination issue.

3.2 ENGINEERING EVALUATION AND COST ANALYSIS SCOPE OF WORK

The SOW states that the intent of the EE/CA is to address contamination at the Site. However, as stipulated in Part III of the AOC (Findings of Fact), the term "Site" consists of The Celotex Corporation 18-acre holding, the 6-acre parcel owned by Monarch Asphalt Company, and "certain other residential areas where hazardous substances from manufacturing operations from these properties have come to be located."

In addition to the preparation of this work plan, the EE/CA process will include:

1. Preparation of a Support Sampling Plan (SSP), including a health and safety plan (HASP) that outlines all procedures, protocols, and rationale for all remaining data collection activities which will be performed in support of the EE/CA.
2. Data collection activities in accordance with the approved SSP.
3. Preparation of data reports that summarize all data from the EE/CA SSP activities and all relevant past investigations.
4. Preparation of a risk assessment that evaluates the risk that may be posed by the Site.
5. Preparation of an EE/CA report that addresses the actions that can be taken to attain specified cleanup action levels and/or objectives.

The following subsections provide additional discussion on each of the five EE/CA scope requirements presented above.

3.2.1 Support Sampling Plan Activities

Following the submittal of the EE/CA work plan, a SSP will be prepared to address all future data collection activities that will be performed for the Site. The intent of this data collection activity is to provide sufficient data to:

1. Characterize the remaining on-site contaminant source(s), determine the extent of Site-related contamination, and evaluate all potential migration routes from the Site.
2. Enable the risks to human health and the environment to be quantified.
3. Facilitate the process of screening and evaluating various remedial technologies and remedial measures to determine the remedial action(s) appropriate and applicable to addressing the on-site and off-site risks posed by the Site.

As discussed previously, the Site Respondents have performed a residential soil sampling program and risk assessment to define the extent to which surrounding residential areas were impacted by past Site activities. As such, no additional investigation or data collection activities for the residential areas are proposed in this work plan. Instead, the results of the residential soil sampling program and associated risk assessment will be incorporated into the EE/CA. The EE/CA will evaluate the risks posed by on-site contamination and any risks posed by contaminated residential soils that may be brought onto the Site (refer to Subsection 3.3). The EE/CA will develop and assess remedial strategies to address defined Site impacts.

The SSP will address the remaining field collection activities deemed necessary to qualitatively and quantitatively define on-site conditions. Supplemental information will be gathered to further define the vertical extent of on-site contamination, identify the spatial distribution of contaminants and contaminant concentrations laterally across the Site, and define site-specific geologic and hydrogeologic conditions. The area groundwater will also be investigated to determine the degree of impairment, if any.

Potential contaminant migration routes will be evaluated as part of this study. This migration pathway investigation will include the identification, assessment and sampling of Site surface water runoff (and run-on if deemed appropriate) routes. In addition, limited additional data will be collected from the area of the barge slip that was previously used by

numerous entities during the course of business operations. Sediment samples will also be collected from the inlet to the Chicago Ship and Sanitary Canal in an effort to determine whether the sediment in this inlet has been impacted by Site contaminants.

The SSP will provide detailed information, and rationale where applicable, on (1) site background, (2) identified data gaps, and the activities that will be performed to address the gaps, (3) the sampling program, including sampling/field procedures, analytical methodologies, and data validation procedures, and (4) the schedule of all SSP tasks. In addition, the SSP will have a HASP included as an appendix. The HASP will address all health and safety issues associated with the supplemental field sampling program. As a minimum, the HASP will be prepared in accordance with the USEPA guidance document "*Standard Operating Safety Guide*," USEPA Publication 9285.1-03, June 1992, and all relevant Occupational Safety and Health Administration (OSHA) requirements, e.g., 29 CFR 1910. The specific information that will be presented in each section of the SSP will address the requirements outlined in Section II of the SOW pertaining to the SSP. A copy of the SOW is provided in Appendix A.

All laboratory analyses and the name and address of the laboratory performing the work for this supplemental sampling program shall be specified in the SSP. The laboratory either will perform the analyses in accordance with the analytical, custody, and documentation procedures required for the USEPA Contract Laboratory Program (CLP), or the approval of the USEPA will be sought to allow the use of alternative procedures. It is understood that advance approval from USEPA must be received prior to implementing alternative (non-CLP) laboratory procedures and/or protocols.

3.2.2 Implementation of Data Collection Activities

All data collection activities will be performed in accordance with the requirements, protocols, procedures, and task schedules contained within the SSP, following approval by the USEPA. The Respondents and Parsons ES will coordinate all activities associated with the SSP with the USEPA Region V Remedial Project Manager. The names and addresses of the main project contact persons and responsibilities of key project personnel are discussed in Section 5.

3.2.3 Preparation of the Data Report

The Site Respondents will prepare a data report that will summarize the results from all appropriate data collection activities associated with the SSP and the data generated from the residential soil sampling program conducted during 1995. The data report will be prepared as a separate deliverable and will include the following information:

- Site Description and Background. To the extent possible, any available information on past facility operations, and on the activities and findings associated with past regulatory investigations, will be included in this discussion.
- Site Characterization. This discussion will include a complete description of (1) the Site's location and physical setting, (2) the geology and hydrogeology of the Site and surrounding vicinity, (3) surrounding land use and demographics, (4) potentially sensitive ecosystems in the vicinity of the Site, based on available data, and (5) area meteorology. Other information encountered during data gathering activities that is deemed pertinent to this discussion will also be included.
- Analytical Data Presentation. The data generated by the support activities performed for the EE/CA study and the data from the Respondents' residential soil sampling program will be presented in the data report in two main formats: as summary tables and as maps. Sample locations with unique identifiers will be clearly depicted on base maps. A Site flyover will be performed to generate area topographic maps and a site survey will be performed to generate a site-specific topographic picture. Groundwater-related data will be presented using groundwater potentiometric and flow directional maps. Geological cross-section drawings will be developed from data generated from the subsurface investigation outlined in the approved SSP.

Chemical analytical data will be displayed in summary tables and on annotated base drawings. The data tables will be presented in two formats: one data table will show all detected compounds and the associated concentrations for each sample, and the second data table will show the maximum concentration of each detected contaminant, and the associated frequency of detection and 95th percentile concentration. The annotated data drawings will be base maps on which certain contaminants and their associated concentrations will be shown relative to an identified sample location.

The schedule for the submittal of the data report will be in accordance with the schedule presented in the approved SSP for this task.

3.2.4 Risk Assessment Preparation

The data generated from the support sampling effort associated with the EE/CA will be used to prepare a risk assessment for the Site. This risk assessment will assess any risks or potential risks posed by contamination on the Site. The risk assessment will be

conducted in accordance with the procedures outlined in the USEPA guidance document *"Risk Assessment for Superfund, Volume 1, Human Health Evaluation Manual," EPA/540/1-89/002*. As indicated previously, part of this task has already been performed by the Site Respondents relative to the evaluation of risks associated with Site-related contamination in the residential areas surrounding the Site (hereinafter referred to as the residential area risk assessment). This risk assessment was submitted to USEPA on 25 October 1996. The effort associated with the residential area risk assessment will not be duplicated in performing the risk assessment for the main site.

The risk assessment prepared as part of this EE/CA study will evaluate on-site contamination and the associated risks to human health and the environment, within the context of future commercial or industrial development of the Site. The risk assessment will address the fact that residential property surrounds the Site. The cleanup objectives and action levels generated by this risk assessment for each media of concern will be based on this redevelopment scenario.

A conceptual discussion on how information from the residential area soil sampling program and risk assessment will be used to expedite response actions associated with the contaminated residential soils, is presented in Subsection 3.3.

In the risk assessment for the main site, the Respondents will propose cleanup objectives and cleanup action levels for the Site. Then, as indicated in the SOW, the USEPA will develop final cleanup objectives and cleanup action levels for each media of concern, and will provide this information to the Respondents.

3.2.5 Preparation of the EE/CA Report

Following the development of cleanup objectives and cleanup action levels by the Respondents, and the identification of final objectives and action levels by USEPA, the Respondents will prepare an EE/CA report. The goal of the EE/CA, as specified in the SOW, is to provide sufficient information to the USEPA to facilitate the selection of appropriate removal actions to address Site contamination under the Agency's non-time critical removal authority. The EE/CA study and report will be completed in accordance

with the requirements presented in Attachment 1 to the SOW (which is part of the AOC) as well as the current USEPA guidance document entitled "Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA," EPA/540-R-93-057, August 1993.

The EE/CA report will identify and evaluate various remedial alternatives based on their ability to attain the final objectives and action levels set for the Site. The alternatives will also be evaluated on the short-term and long-term aspects of the following three criteria:

Effectiveness	Implementability	Cost
Overall Protection of Public Health and the Environment	Technical Feasibility	Capital Costs
Long-term Effectiveness and Permanence	Administrative Feasibility	Long-term Operation and Maintenance Costs
Compliance with ARARs and other Criteria, Advisories, and Guidance	State and Community Acceptance	
Short-term Effectiveness		
Reduction of Toxicity, Mobility or Volume Through Treatment		

After each remedial alternative has been independently assessed against each of the above-mentioned evaluation criteria, the alternatives will be quantitatively and qualitatively compared against each other in relation to each criterion. This process will enable the strengths and weakness (advantages and disadvantages) of each alternative to be identified relative to each other, helping to identify those issues that most affect the final remedy selection. In this way, if one remedial action is chosen instead of another because of the manner in which a particular criterion was emphasized over another, the Agency could re-visit the selection process if so desired.

During the process of preparing the EE/CA, the Respondents will address remedial actions associated with residential soil contamination in an expedited fashion to enable remediation of these off-site impacted areas to be implemented under a more aggressive schedule. This is discussed further in the next subsection.

3.3 CONCEPTUAL DISCUSSION ON RESPONSE ACTIONS TO ADDRESS RESIDENTIAL SOIL CONTAMINATION

The intent of the Respondents is to base the remedial approach for the impacted residential areas on the findings and determinations of the residential area risk assessment. This risk assessment evaluated a residential study area that was defined as the homes within a 2,500-foot radius from the Site. The chemicals of concern assessed during the risk evaluation process are the carcinogenic PAHs, expressed as benzo(a)pyrene equivalents (BaPeq). The risk assessment utilized both deterministic and probabilistic methodologies to develop risk-based cleanup goals (RBCGs) for the impacted residential area.

The concept of an exposure point concentration (EPC) was also incorporated into the residential areas risk assessment process because it was deemed important in developing a remediation strategy. The EPC, a concept created by USEPA, can be defined as the average concentration experienced by a human receptor as he or she moves throughout the study area. This concept reflects the reality that individuals do not receive all their exposure on a single property but over multiple properties within their neighborhood. Since the true average concentration is not known, the most common estimate is the mean of the sampled concentrations, with a 95% confidence interval around the mean indicating uncertainty based on the sample size and on the observed variability in the sampled values. A conservative upper-bound estimate for the "true" mean concentration is given by the upper end of this 95% confidence interval.

The RBCG calculated in the residential area risk assessment based on deterministic methods is 27.5 milligrams per kilogram (mg/kg) BaPeq. The distribution of BaPeq concentrations generated by probabilistic methods that reflects health-protective cleanup goals (Table 3.1) follows intuitive logic; the lower the cleanup goal, the smaller will be the uncertainty about whether a health-protective level has been achieved. For example, the 10th percentile of risk is associated with a cleanup goal of 6.4 mg/kg BaPeq and the 95th percentile of risk is associated with a cleanup goal of 72.7 mg/kg BaPeq. The RBCG of 27.5 mg/kg calculated by deterministic methodology corresponds to a mid-range level of risk around the 60th percentile.

TABLE 3.1
RISK-BASED CLEANUP GOALS
GENERATED FROM PROBABLISTIC ASSUMPTIONS

2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS

Percentile of Uncertainty	Health-Protective Cleanup Goals mg/kg BaPeq
Minimum	0
10th	6.4
20th	9.5
30th	12.8
40th	16.4
50th	20.8
60th	26.1
70th	33.3
80th	43.6
90th	58.2
95th	72.7
Maximum	99.9

Source: Deterministic and Probabilistic Calculations to Estimate Risk-Based Clean-up Goals. Alceon Corporation. 25 October 1996

A study was performed as part of the residential area risk assessment to determine potential candidates for remediation of residential surface soils. The study, entitled *"Estimating the Spatial Extent of Site-Related Contamination,"* and included in the residential area risk assessment as Appendix B, assessed the distance beyond which a relationship between Site-related contamination and distance from the Site could not be demonstrated, in order to define the boundary of background locations. Those residences that were located within the radius of potential impact from Site contamination would be potential candidates for remediation and those outside of this defined area would be considered background locations, and would not be candidates for remediation. The study concluded that a reasonable boundary for the area of impact could be set at a radius of 1,100 feet for the northwest and southwest quadrants, and at a radius of 1,300 feet for the northeast quadrant. Properties that fall outside of these boundaries will not be assessed for remedial actions because these areas are considered to be background.

When evaluating whether a specific property exceeds a cleanup goal or cleanup objective, it is important to understand that a human receptor will have his or her exposure over an area within a given neighborhood. Individuals will experience a frequency distribution of daily exposures, and the goal of health protective measures is to assure that the distribution is acceptable. Since there are multiple ways to choose locations to remediate so that the post-remediation exposure frequency distribution will have a mean value less than a specified target value, our recommended approach is based on selecting the worst locations first as candidates for remediation. In this way the criteria of health protectiveness and cost effectiveness are both satisfied.

The independent use of either the EPC or the RBCG to define the extent of residential area removal actions would not necessarily be protective of human health and the environment. Instead, it is more appropriate to base removal actions on the combined influences of both criteria. Incorporating both the distribution of EPCs and RBCGs into the process of choosing residential candidates for remediation from within the defined zone of

impact, provides a logical, health-protective, and resource-efficient remediation strategy. This strategy is summarized as follows:

- Step 1: The BaPeq concentrations at all the residential properties within the study area would be characterized based on a sampling and analysis program. An adaptive sampling program may possibly yield more information than one in which every home is sampled, since measurements within a property are subject to variability.
- Step 2: The distribution of EPCs would be estimated using spatial statistics.
- Step 3: The distribution of EPCs (based on measured BaPeq concentrations) would then be compared to the distribution of the RBCG. If the EPC distribution is found to significantly exceed the RBCG, as determined by a statistical comparison of their cumulative distributions, surface soils at one or more of the most contaminated residential properties would be remediated.
- Step 4: If the distribution of the remaining concentrations still does not meet the distribution for the RBCG, one or more of the more contaminated properties that remain will be remediated.
- Step 5: Step 4 will be repeated and remediation will continue until the distribution of the EPCs is smaller, i.e., has lower percentiles, than the RBCG distribution.

At the culmination of the above five-step process, the distribution of EPCs in the residential areas will be statistically smaller than the RBCG distribution, i.e., the distribution of EPCs will have met all the constraints defined by the RBCG distribution. Resultantly, the remedial process will have reduced the risks associated with the potential exposure to elevated levels of Site contaminants to a level that is acceptable for human receptors, and reflective of residential area background concentrations, via the removal of the most impacted soils.

An alternate remedial approach to residential cleanup relative to background concentrations will also be explored during this EE/CA process. The concept involves identifying the background distribution for the contaminants of concern, and remediating the "foreground" (impacted residential areas) until its distribution frequency for the contaminants of concern compares favorably to the background distribution. The boundary between background and foreground was previously discussed, and was set at a radius of 1,100 feet for the northwest and southwest quadrants, and at a radius of 1,300 feet for the northeast quadrant. Determining which properties to remediate under this approach will

also be an iterative process based on sequential adaptive sampling. The equivalent five-step strategy would be as follows:

- Step 1: The background frequency distribution would be estimated based on a random sampling program or would be established using already existing data.
- Step 2: The foreground frequency distribution would be characterized based on a random sampling and analysis program of impacted residential communities.
- Step 3: The estimated background and foreground frequency distributions will be compared.
- Step 4: If the foreground distribution frequency compares unfavorably to the background, a sequential adaptive sampling approach will be used to choose the properties (one or more) with potentially the highest contaminant levels for further investigation and remediation.
- Step 5: Steps 3 and 4 will be repeated and remediation will continue until the estimated frequency distribution of the residual contaminant levels in the foreground compares favorably to the estimated background frequency distribution.

The final determination on which strategy to use will depend on several factors, such as the final assessment of the foreground and background distribution frequencies, and the implications of the resulting remedial program. These final determinations can only be made after the implementation of the "residential area conceptual work plan" referenced in Section 4.

The data on which the "residential area conceptual work plan" strategy will be based was generated in the residential sampling program. Therefore, a response action to address residential soil contamination can be implemented independent of the EE/CA study activities discussed previously in this work plan. The risk scenarios for the residential risk assessment will differ from those which will be developed for the main site risk assessment, because exposure scenarios for residential communities are significantly more conservative than those developed for an area whose end use will be commercial or industrial. Because the residential risk assessment has been completed ahead of the EE/CA study, the opportunity exists to implement remedial measures in the residential areas at an expedited pace that is not connected to the EE/CA process.

Where possible, the intent of the Respondents is to relocate all impacted soils to the Site so that the EE/CA can evaluate remedial actions for all contaminated media simultaneously. Currently, the Site is vacant and void of major surface obstructions or aboveground structures. Following the completion of site investigatory activities associated with the SSP, contaminated soils from residential properties that are identified for remediation could be brought onto the Site for temporary staging or permanent management (based on the outcome of the EE/CA). Measures would be put in place to address issues such as erosion control, surface water and sediment runoff management, and dust emissions control.

Depending on the final cleanup goals and objectives identified for the Site, it is possible that some or all of the contaminated residential surface soil material could remain on site if the contaminant concentrations in these soils (and the associated risks posed by the material) do not exceed the remedial objectives and goals developed for the Site. Furthermore, this approach is expected to provide some cost savings to the Respondents if "hot spot" removal actions are deemed necessary to address on-site risks. On-site removal actions would generate a need for backfill material to fill the excavated areas. Some of the impacted soils from the residential properties could qualify as acceptable backfill for the Site given the identified final use as industrial or commercial property.

If on-site management of some or all of impacted residential surface soil material becomes infeasible, other alternate disposal measures can be easily and quickly evaluated. These off-site disposal alternatives include (1) using the material as final cover at a nonhazardous landfill, (2) providing the soils to a brick manufacturer for incorporation into bricks, (3) using the material to make hot-mix asphalt (bituminous concrete), (4) using the material as subgrade in roadway construction, and (5) disposal of the material in a landfill as special waste.

SECTION 4

GENERAL PROJECT SCHEDULE

4.1 SCHEDULE BREAKDOWN

The SOW for the preparation of the EE/CA work plan required the inclusion of established deadlines for the completion of all major tasks, including field sampling activities and major reports (data, risk assessment, and EE/CA reports). Until the field sampling and data collection program was completely defined and scoped, it was difficult to establish schedule deadlines for this task or those that follow. However, subsequent to the submittal of the draft EE/CA work plan to USEPA, the field sampling program was scoped by the Respondents. A detailed task by task schedule showing deadlines for all activities and deliverables associated with the EE/CA has been provided in Subsection 2.11 of the draft SSP that was submitted to the USEPA on 14 January 1997 for review.

In addition, the Site Respondents will submit a work plan that defines the approach for achieving the expedited follow-up to the residential exposure issue required in the Consent Order. The work plan, which will be referred to as the "residential area conceptual work plan," will be based upon the five-step approaches described in Subsection 3.3, and will be submitted to USEPA within 60 days following the approval of the EE/CA work plan. A schedule to implement the residential area conceptual work plan will be included.

SECTION 5

KEY PROJECT PERSONNEL

5.1 PERSONNEL ROLES AND RESPONSIBILITIES

There are four main organizations involved in the management and execution of the EE/CA:

1. AlliedSignal - Respondent
2. The Celotex Corporation - Respondent
3. USEPA Region V - Lead Regulatory Agency
4. Parsons ES - Respondents' Environmental Consultant

Each organization has one or more key representatives who will have functional roles in the execution, management, and supervision of activities related to EE/CA. These key persons and their role/responsibilities are identified below, and are shown on Table 5.1 with work addresses and telephone numbers. This list will be updated periodically, as required.

Key project personnel company affiliations and project roles include:

- Mr. David A. Paley, P.E. - AlliedSignal, Manager, Site Remediation
- Mr. Lecil Colburn - The Celotex Corporation, Director, Environmental Affairs
- Mr. Thomas G. Williams, P.E. - USEPA Region V, Remedial Project Manager
- Ms. Mona D. Sutherland - Parsons ES, Project Manager

**TABLE 5.1
PROJECT CONTACT LIST**

**2800 SOUTH SACRAMENTO AVENUE SITE
CHICAGO, ILLINOIS**

Affiliation	Contact Personnel
AlliedSignal, Inc 101 Columbia Road Morristown, New Jersey 07962	Mr. David A. Paley, P.E. Manager of Site Remediation Tel. No.: (201) 455-3302 Fax. No.: (201) 455-4835 E-Mail: paleyd@alliedsignal.com
Celotex Corporation 4010 Boy Scout Boulevard Tampa, Florida 33607-5750	Mr. Lecil Colburn Director of Environmental Affairs Tel. No.: (813) 873-4369 Fax. No.: (813) 873-4361
USEPA Region V 77 West Jackson Boulevard Chicago, Illinois 60604-3590	Mr. Thomas G. Williams, P.E.(SR-6J) Remedial Project Manager Tel. No.: (312) 886-6157 Fax. No.: (312) 353-5541 E-Mail: williams.thomas@epamail.epa.gov
Parsons Engineering Science, Inc. 1000 Jorie Boulevard, Suite 250 Oakbrook, Illinois 60521	Mona D. Sutherland Project Manager Tel No.: (630) 990-7239 Fax. No.: (630) 990-7218 E-Mail: mona_sutherland@parsons.com